

wherein

5 R⁷ and R⁸, independently of each other, represent hydrogen or C₁-C₆-alkyl, preferably C₁-C₄-alkyl, optionally a 5 or 6-membered ring, preferably cyclohexyl or cyclopentyl,

x and y, independently of each other, represent 0, 1, 2, 3, 4, 5, preferably 0, 1 or 2
10 and

n represents 1 or 2,

R⁷ and R⁸, independently of each other, stand particularly preferably represent C₃-C₄-alkyl, particularly iso-propyl and/or tert.-butyl.

If n = 1, the valence bond of the carbon atom in question is attached to hydrogen or C₁-C₆-alkyl, C₁-C₆-alkoxy, optionally 5 or 6-membered ring, preferably C₁-C₄-alkyl, preferably to the radicals named in the case of R⁷ and R⁸.

20 The structural formulae given reproduce in each case the main components (>90%) of the industrially used compounds which may contain e.g. isomers, starting compounds and secondary compounds in smaller proportions.

25 The stabiliser mixture containing a lactone derivative I, sterically hindered phenol II and phosphite component III (phosphonite) is generally used in proportions by weight, based on the polymer used, of 2% to 0.001%, preferably 1% to 0.005%, and more particularly preferably 0.6% to 0.01%.

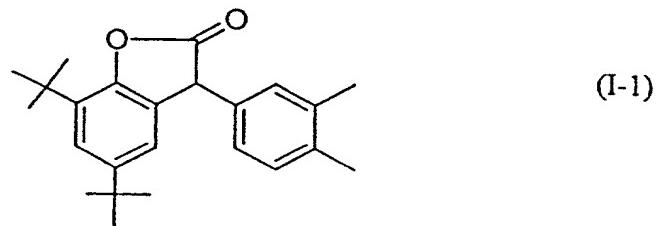
The proportion of individual components of lactone I, sterically hindered phenol II and phosphite component III (phosphonite) is generally 5 to 95 parts by wt., preferably 10 to 60 parts by wt., the proportions of the individual components adding up to 100.

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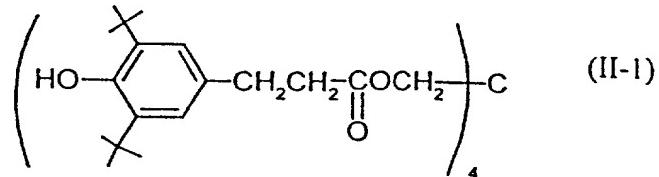
A mixture more particularly preferred contains the lactone HP 136 (compound I-1) (Ciba Speciality Chemicals, Basel, Switzerland) with a proportion of 5 to 40, particularly 10 to 25 parts by wt., the sterically hindered phenol Irganox 1010 (compound II-1) (Ciba Speciality Chemicals, Basel, Switzerland) with a proportion of 30 to 70 parts by wt., and the phosphonite Irgafos P-EPQ (compound III-1) (Ciba Speciality Chemicals, Basel, Switzerland), with a proportion of 10 to 50 parts by wt., the proportions of the individual components adding up to 100.

The formulae of the compounds I-1, II-1 and III-1 are shown below:

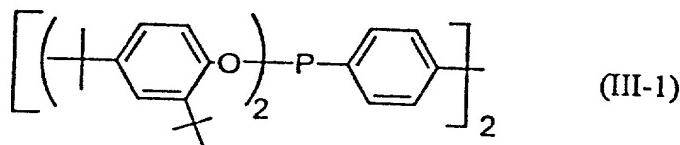
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The lactones, sterically hindered phenols and phosphite compounds are generally well known and available commercially.

5 The VCH (co)polymers are prepared by polymerising derivatives of styrene with the corresponding monomers by free-radical, anionic or cationic polymerisation or by means of metal complex initiators or catalysts, and the unsaturated aromatic bonds are then hydrogenated wholly or partially (cf. e.g. WO 94/21694, EP-A 322 731).

10 The vinylcyclohexane-based polymers generally exhibit practically complete hydrogenation of the aromatic units. As a rule, the degree of hydrogenation is $\geq 80\%$, preferably $\geq 90\%$, more particularly preferably $\geq 99\%$ to 100%. The degree of hydrogenation can be determined, for example, by NMR or UV spectroscopy.

15 The starting polymers are generally well known (e.g. WO 94/21694).

15 The amount of catalyst used depends on the process carried out; this may be carried out continuously, semi-continuously, or batchwise.

20 The ratio of catalyst to polymer is, for example, generally 0.3 - 0.001, preferably 0.2 - 0.005, particularly preferably 0.15 - 0.01 in the batchwise process.

25 The polymer concentrations, based on the total weight of solvent and polymer, are generally 80 to 1, preferably 50 to 10, particularly 40 to 15 wt.%.

Hydrogenation of the starting polymers is carried out according to generally well known methods (e.g. WO 94/21 694, WO 96/34 895, EP-A-322 731). A plurality of well known hydrogenation catalysts may be used as catalysts. Preferred metal catalysts are mentioned, for example, in WO 94/21 694 or WO 96/34 896. The catalyst used may be any catalyst known for hydrogenation reactions. Catalysts with a large surface area (e.g. 100 - 600 m²/g) and a small average pore diameter (e.g. 20 - 30 500 Å) are suitable. Also suitable are catalysts with a small surface area (e.g. ≥ 10